

TABLE OF CONTENTS

TM 9-2320-273-10

Table 1-1. Performance Data

MODEL	ITEM
	CAPACITIES
	Engine Oil (Refill capacity includes filter)
ALL	46.00 qt. (43.65 liters)
	Engine Filter (Refill Capacity)
ALL	4 qt. (3.78 liters)
	Engine Bypass Oil Filter (Refill Capacity)
ALL	14.00 qt. (13.24 liters)
	Cooling System (Refill Capacity)
ALL	65 qt. (81.49 liters)
	Fuel 118 gal tank (446.63 liters)
ALL	Usable 110 gal (416.35 liters)
	Power Steering Reservoir
ALL	2 qt. (1.8 liters)
	Winch Reservoir
M916 and M920	42 gal (158.97 liters)
M916 and M920	5 qt. (4.73 liters)
	Front Axle
M915 M916 thru M920	27 pt. (12.78 liters)

LUBRICATION ORDER ARMY LO 9-2320-280-12
AIR FORCE TO 36A12-1A-2091LC-1
MARINE CORPS LI 2320-12/8

19 JUNE 1990

(SUPERSEDES LO9-2320-280-12, 15 OCT 1981)

**TRUCK, UTILITY: CARGO/TROOP CARRIER, 1-1/4-TON,
4X4, M998 (2320-01-107-7155);**
**TRUCK, UTILITY: CARGO/TROOP CARRIER, 1-1/4-TON,
4X4, W/WINCH, M1038 (2320-01-107-7156);**
**TRUCK, UTILITY: TOW CARRIER, ARMORED, 1-1/4-TON,
4X4, M966 (2320-01-107-7153);**
**TRUCK, UTILITY: TOW CARRIER, ARMORED, 1-1/4-TON,
4X4, W/WINCH, M1036 (232-01-107-7154);**
**TRUCK, UTILITY: TOW CARRIER, W/SUPPLEMENTAL ARMOR,
1-1/4-TON, 4X4, M1045 (2320-01-146-7191);**
**TRUCK, UTILITY: TOW CARRIER, W/SUPPLEMENTAL
ARMOR, 1-1/4-TON, 4X4, W/WINCH, M1046, (2320-01-146-7188);**
**TRUCK, UTILITY: ARMAMENT CARRIER, ARMORED,
1-1/4-TON, 4X4, M1045 (2320-01-128-9551);**
**TRUCK, UTILITY: ARMAMENT CARRIER, W/SUPPLEMENTAL
ARMOR, 1-1/4-TON, 4X4, M1043 (2320-01-146-7190);**
**TRUCK, UTILITY: ARMAMENT CARRIER, W/SUPPLEMENTAL
ARMOR, 1-1/4-TON, 4X4, W/WINCH, M1044 (2320-01-146-7189)**
**TRUCK, UTILITY: S250 SHELTER CARRIER,
4X4, M1037 (2320-01-146-7193);**
**TRUCK, UTILITY: S250 SHELTER CARRIER, 4X4,
W/WINCH, M1042 (2320-01-146-7187);**
**TRUCK, AMBULANCE: 2-LITTER, ARMORED,
4X4, M966 (2310-01-111-2275);**
**TRUCK, AMBULANCE: 4-LITTER, ARMORED,
4X4, M966 (2310-01-111-2275);**
**TRUCK, AMBULANCE: 2-LITTER, SOFT TOP,
4X4, M1035 (2310-01-146-7194)**

APPROVED FOR PUBLIC RELEASE, DISTRIBUTION IS UNLIMITED

TA 267881

--KEY--

LUBRICANTS	CAPACITIES	EXPECTED TEMPERATURES			INTERVALS
		Above + 15°F (Above -9°C)	+40° to -15°F (+4° to -26°C)	+40° to -65°F (+4° to -54°C)	
OE/HDO-LUBRICATING OIL, INTERNAL COM- BUSTION ENGINE, TACTICAL SERVICE (MIL-L-2104)					C/MR Change gear lubricant only when required by maintenance repair action or if contaminated by other materials. D-Daily W-Weekly M-Monthly 3/S -3,000 miles*** (4,800 km) or semiannually (6 months), whichever comes first. 6/A -6,000 miles (9600 km) or annually (12 months), whichever comes first. 12/B -12,000 miles (19,200 km), whichever comes first.
OEA-LUBRICATING OIL INTERNAL COM- BUSTION ENGINE, (ARCTIC) (MIL-L-46167)					
OIL CAN POINTS		OE/HDO-30*	OE-HDO-10**	OEA*	
CRANKCASE:		OE/HDO 30*	OE/HDO 10**	OEA*	
W/O FILTER	7qt (6.61)				
W/FILTER	8qt (7.61)				
DRY SYSTEM (INCL. OIL COOLER)	10qt (9.51)				
GO-LUBRICATING OIL, GEAR, MULTIPURPOSE (MIL-L-2105)					FOR ARCTIC OPERATION, REFER TO FM 9-207
GEARED HUB (4)	1 pt ea. (0.471)	GO 80/90	GO 80/90	GO 75	
DIFFERENTIAL (2)	2 qt ea. (1.91)	GO 80/90	GO 80/90	GO 75	
DEXTRON II		ALL TEMPERATURES			
TRANSMISSION					
DRY	11 qt (10.41)				
DRAIN AND FILL	6 qt (5.71)				
TRANSFER CASE	3.5 qt (3.31)				
TOTAL STEERING SYSTEM	1 qt (0.95)				
WITH STEERING COOLER	1.25 qt (1.18)				
BFS-BRAKE FLUID, SILI- CONE, AUTOMOTIVE ALL WEATHER, OPER- ATIONAL AND PRESERVATIVE (MIL-B-461676)		ALL TEMPERATURES			
BRAKE MASTER CYLINDER	0.69 qt (0.33 l)				
TOTAL BRAKE SYSTEM	1.2 pt (0.56 l)				

FOR ARCTIC OPERATION, REFER TO FM 9-207

- * OE/HDO 15/40 (Grade 15W-40) lubricant may be used when expected temperatures are above +5°F (-15°C).
- ** If OEA lubricant is required to meet the temperature ranges prescribed in the KEY, then the OEA lubricant is to be used in place of OE/HDO 10 lubricant for all temperature ranges.
- *** If operating conditions are severe or abnormal, service chassis lubrication points at 1,000 miles (1,600 kilometers).

LUBRICANT / INTERVAL

INTERVAL / LUBRICANT

Front Geared Hub
Fill and Level
(Check level)
(See note 9)
(LV-S) (0)

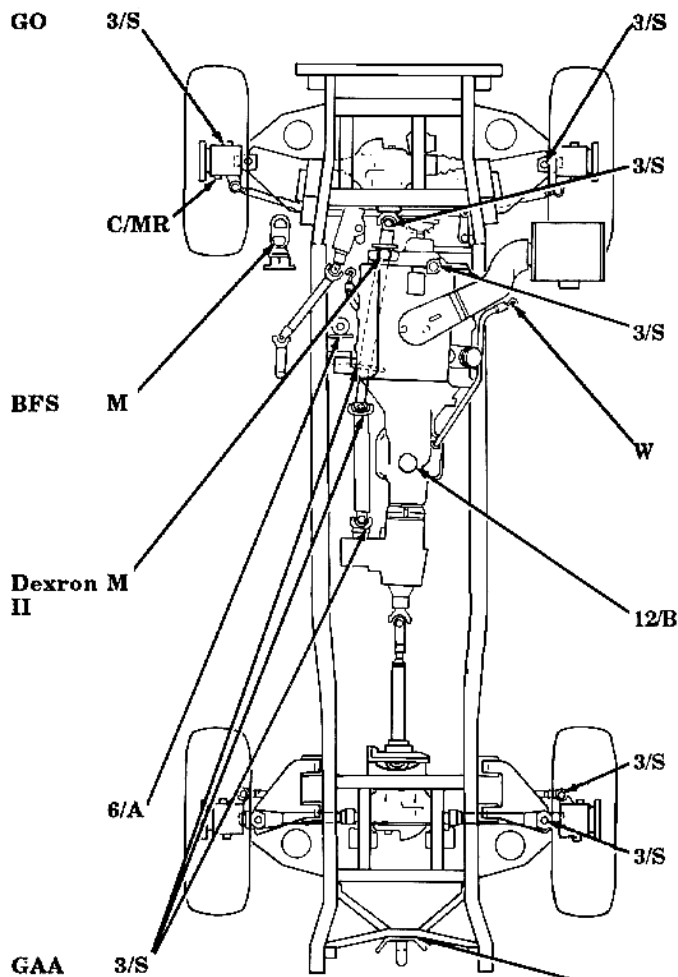
Front Geared Hub
Drain
(See note 9)
(LV-R) (0)

Brake Master
Cylinder
(See note 12)
(LV-Y) (C)

Power Steering
Reservoir
Fill and Level
(Check Level)
(See note 11)
(LV-Y) (C)

Fuel Filter
(See note 6)
(LV-AB) (0)

Front Propeller
Shaft Universal
and Slip Joints
(3 fittings)
(See note 10)
(LV-U, V) (0)



GAA Front Upper
Control Arm
Ball Joint
(LV-T) (0)

GAA Front Propeller
Shaft Universal
Joint
(See note 10)
(LV-U) (0)

OE/
HDO Crankcase
Fill
(See note 4)
(LV-X) (0)

Dexron
II Transmission
Fill and Level
(Check Level)
(See note 7)
(LV-Z) (C)

Transmission
Drain
(See note 7)
(LV-AA) (0)

GAA Radius Rod
(LV-AC) (0)

GAA Rear Upper
Control Arm
Ball Joint
(LV-T) (0)

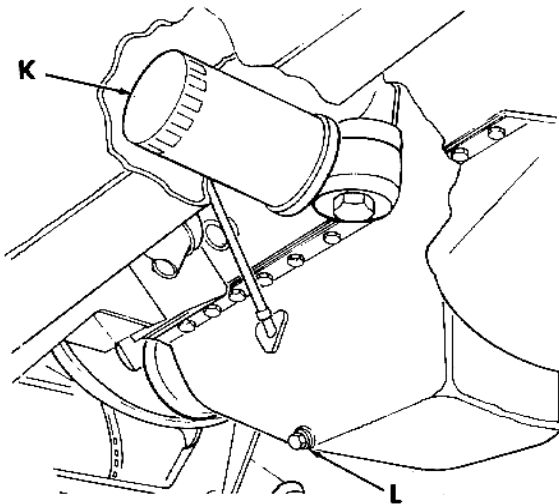
GAA Pintle
(See note 13)
(LV-AD) (0)

NOTE

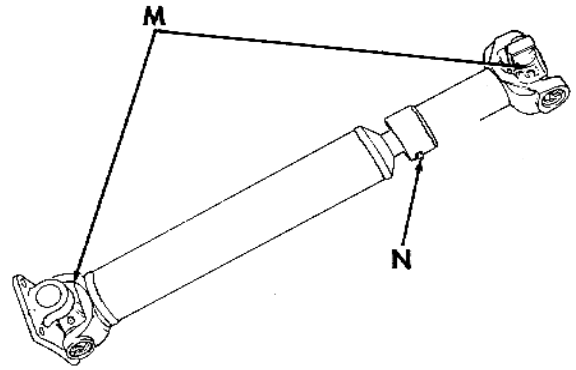
A PREFERENCE TO THE LOCALIZED VIEW (LV) IS
PROVIDED AFTER LUBRICATION POINT ENTRY

TA267872

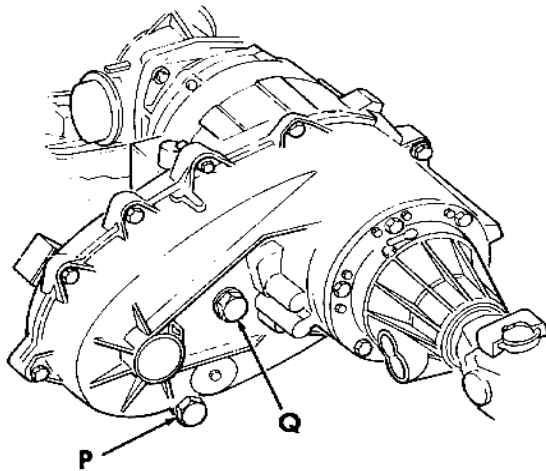
LOCALIZED LUBRICATION POINTS (K THROUGH W)



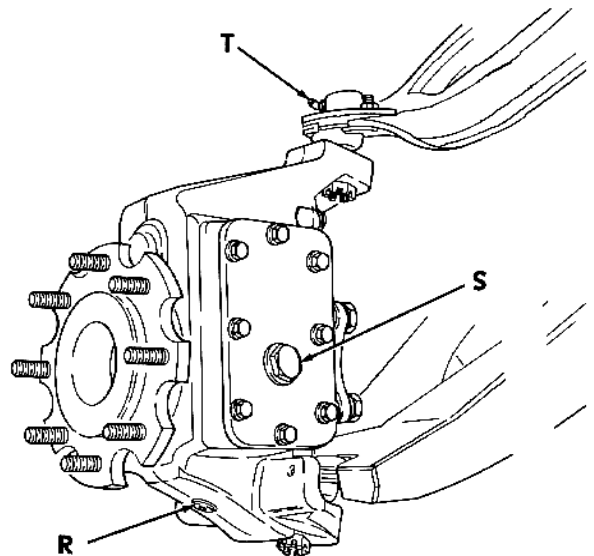
OIL FILTER AND CRANKCASE DRAIN



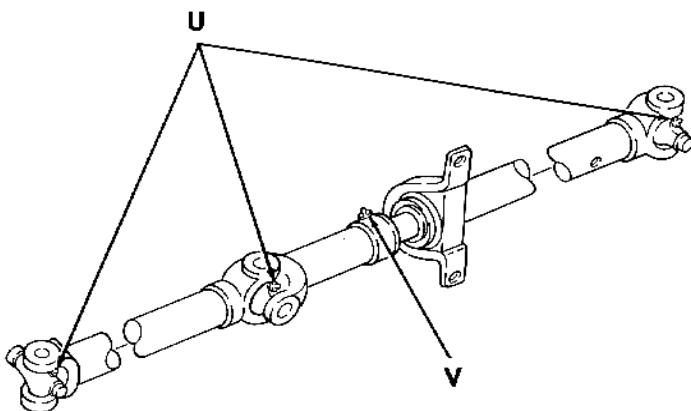
**REAR PROPELLER SHAFT UNIVERSAL
AND SLIP JOINTS**



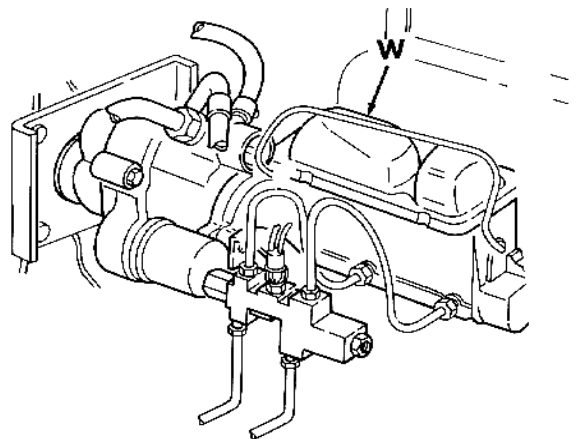
TRANSFER CASE



**GEARED HUB AND
UPPER CONTROL ARM BALLJOINT**



**FRONT PROPELLER SHAFT UNIVERSAL
AND SLIP JOINTS**



BRAKE MASTER CYLINDER

NOTES

1. Intervals. This LO complies with DA programming to extend intervals and conserve lubricants. When practicable, lubrication services will be made to coincide with the vehicle's Semiannual ("S") Preventive Maintenance Service. For this purpose, a 10% tolerance (variation) in specified lubrication point mileage is permissible. Those vehicles not accumulating 1,000 mi..... (1,600 km) in a 6-month period will be lubricated at the time of "S" Preventive Maintenance Service.

2. Army Oil Analysis Program (AOAP). AOAP does not apply to the M998 series vehicles.

3. For operation of equipment in Protracted Cold Temperatures Below 5°F (-26°C). Remove lubricants prescribed in key for temperatures above -15°F (-26°C). Re-lubricate with lubricants specified in key for temperatures below -15°F (-26°C). If OEA lubricant is required to meet the temperature ranges prescribed in the key, OEA lubricant is to be used in place of ~~CAUTION~~ lubricant for all temperatures where ~~CAUTION~~ is specified. There are two marks on the dipstick, "FULL" and "ADD 1 QT." The quantity of oil required to

4. Crankcase. Check oil level from "ADD 1 QT" mark to "FULL" mark is 1 qt (0.9l). Do not overfill crankcase. Overfilling will result in damage to engine.

- If water or metal particles are detected during crankcase draining, notify Direct Support Maintenance personnel before filling crankcase.

NOTE

- If oil level is above "FULL", it may be due to oil cooler drain back. Operate the engine for one minute, shut down, wait one minute, recheck oil level.

- Replace oil filter each time crankcase is drained. Fill crankcase with 8 qt(7.6 l) of engine oil. Crankcase capacity is 7 qt (6.6 l) and oil filter capacity is 1 qt (0.9 l).

- Oil is added to crankcase through fill tube which is located on top of engine.

Check crankcase oil level daily. Start engine and visually check for oil leaks at drain plug and oil filter. Stop engine and allow approximately one minute for oil to drain back into oil pan; recheck oil level with dipstick. On vehicles with deep water fording, the dipstick has a seal which fits into the opening of the dipstick tube. The dipstick handle must be turned counterclockwise to be released before dipstick is withdrawn. Turn handle clockwise to seat after installing dipstick. Change oil every 3,000 mi..... (4,800 km) or semiannually, whichever comes first.














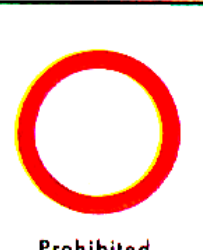

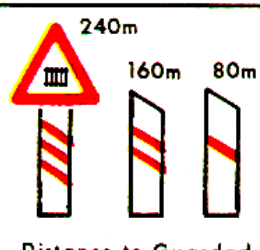




- If water or metal particles are detected
- 5. Engine Oil Filter.** filter replacement, notify Direct Support Maintenance personnel before refilling crankcase.

NOTE

Replace oil filter each time crankcase is drained. Change oil filter every 3,000 mi..... 4,800 mi..... semiannually, whichever occurs first.

- 6. Fuel Filter.** Replace filter element every 6,000 mi (9,600 km) or annually, whichever occurs first. Replace with separator element if unserviceable.

INTERNATIONAL ROAD SIGNS

 <p>Danger</p>	 <p>STRASSENBAHN</p>	 <p>Oncoming Traffic</p>	 <p>Crossroads</p>
 <p>Bicycle Crossing</p>	 <p>Dangerous Downgrade</p>	 <p>Dangerous Upgrade</p>	 <p>Rough Road</p>
 <p>Signal Lights Ahead</p>	 <p>Stop</p>	 <p>Yield Right of Way</p>	 <p>Maximum Height Allowed</p>
 <p>Temporary 'GO' Sign</p>	 <p>Prohibited For All Vehicles</p>	 <p>Entry Prohibited</p>	 <p>Distance to Guarded Railroad Crossing</p>
 <p>Restricted No Stopping</p>	 <p>No Stopping</p>	 <p>No Passing</p>	 <p>End of No Passing Zone</p>

HAND AND ARM SIGNALS



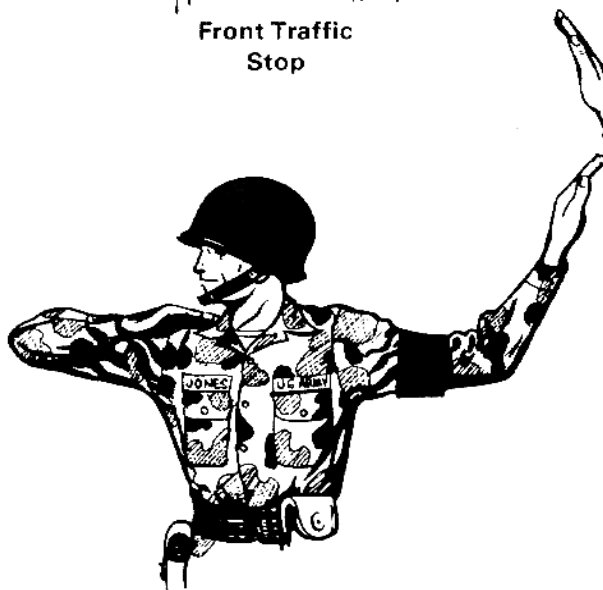
Left and Right
Traffic Stop



Front Traffic
Stop



Rear Traffic
Stop



Traffic From
Right Go



Traffic From
Left Go

SIGNALS GIVEN BY TRAFFIC CONTROL PERSONNEL

GLOSSARY

ADP	automatic data processing	N	neutral
AF	Air Force	NATO	North Atlantic Treaty Organization
AFM	Air Force Manual	NBC	nuclear, biological, and chemical
AFR	Air Force Regulation	NCO	noncommissioned officer
AFTO	Air Force Technical Order	NCOIC	noncommissioned officer in charge
AR	Army Regulation	NVG	night vision goggle
ATTN	attention		
ATV	all-terrain vehicle	OF	Optional Form
		OIC	officer in charge
C	Celsius	OJT	on-the-job training
CAR	customer account representative	OSHA	Occupational Safety and Health Act

SAMPLE

REFERENCES

SOURCES USED

These are the sources quoted or paraphrased in this publication.

ARMY PUBLICATIONS

Army Regulations

AR 190-5. Motor Vehicle Traffic Supervision. 8 July 1988.

AR 310-25. Dictionary of United States Army Terms. 15 October 1983.

AR 310-50. Authorized Abbreviations and Brevity Codes. 15 November 1985.

AR 746-1. Packaging of Army Materiel for Shipment and Storage. 8 October 1985.

Table 2-2. Preventive Maintenance Checks and Services for Model H

Item No.	Interval	Location	<u>Crewmember</u> Procedure	Not Fully Mission Capable if:
		Item to Check/Service		
6	Before	Right Side Tires	<u>DRIVER</u> <u>WARNING</u> Operating a vehicle with a tire in an under-inflated condition or with a questionable defect may lead to premature tire failure and may cause equipment damage and injury or death to personnel. Visually check tire presence and under-inflation.	
7	Before	Front	<u>DRIVER</u> <u>NOTE</u> If leakage is detected, investigation is needed to determine the location and cause of the leak. a. Check body for visual damage that would impair operation of the vehicle. b. Look under vehicle for evidence of fluid leakage.	Tire missing, deflated, or unserviceable a. Any damage that will prevent operation. b. Class III leak of oil, fuel, or coolant.
8	Before	Cooling System	<u>DRIVER</u> <u>WARNING</u> If engine has been recently operated, do not remove radiator cap to check coolant level. Cooling system is under pressure and escaping steam or coolant can cause burns.	

2-24. OPERATING IN EXTREME COLD, ON ICE OR SNOW

EXAMPLES ONLY

BEFORE OPERATION:

1. Operator arctic winterization kit (para. 2-32).
2. Scrape off any ice accumulated on vehicle.
3. Remove ice and snow from area around air cleaner intake cap.

DURING OPERATION:

1. Place transmission shift lever in "D" (drive) and transfer case shift lever in "H/L" (high lock range). Place vehicle in motion slowly to prevent wheels from spinning.
2. If rear skidding occurs:
 - a. Let up on accelerator pedal.
 - b. Turn steering wheel in direction of skid until vehicle control has been regained.
 - c. Apply brake pedal in a gradual pumping manner.

AFTER OPERATION:

1. Remove all ice and snow from underside of vehicle and tank filler cap.
2. Drain fuel filter (para. 3-10)